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| 10/650,363      | 08/27/2003  | Harshvardhan Sharangpani | 81862P288           | 7318             |

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EXAMINER

TIMBLIN, ROBERT M

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2167

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/650,363 | <b>Applicant(s)</b><br>SHARANGPANI ET AL. |  |
|                              | <b>Examiner</b><br>Robert M. Timblin | <b>Art Unit</b><br>2167                   |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This office action corresponds to application 10/650,363 and Applicant's remarks/amendments filed 8/31/2006. Claims 1-15 and 27-72 are pending prosecution in this application. Claim 26 has been cancelled at the Applicant's request. The Examiner's responses to the amendments start on this page. The Examiner's responses to the Applicant's arguments begin on page 8 of this document.

#### ***Response to Amendment***

##### ***Drawings***

Applicant's amendments to the specification correct the informalities of the drawings and therefore the objections to the drawings are removed.

##### ***Claim Objections***

The Examiner recognizes amendments to claims 14 and 15 to correct the antecedent basis issue. The correction has been accepted and accordingly, the objection is withdrawn.

##### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-25 and 27-70 are rejected under 35 U.S.C. 102(b) as being anticipated by **Messenger et al.** ('Messenger') (US Patent 5,051,947).

With respect to claims, 1,2, and 67, **Messenger** teaches A rule processor for conducting contextual searches, the processor comprising:

**'a plurality of input payload search registers'** as a character registers (abstract and figure 1).

**'a search execution engine (figures 1 and 4) comprising:**

**'a search array** (figures 3a-3e' steps a-i) **coupled to the plurality of search registers,** (abstract and figures 3-4) **wherein content in the plurality of search registers is replicated and stored in the search array** (pattern register; figure 3a), and

**'a sorter coupled to the search array** (search processor; figure 1 and column 3 lines 19-25) **to perform one or more contextual searches on content in the search registers via parallel pattern matching** (col. 5 lines 37-56) **in response to executing one or more search instructions specifying the one or more pattern searches and presenting one or more patterns to the content in the search registers'** (col. 19 line 18-col. 20 line 18 and col. 22 lines 47-67).

With respect to claims 3, 4, 6, 12, 15, 22, 30, and 63, **Messenger** teaches **'at least one of the one or more search instructions specifies a pattern that is to be searched against the**

**content in the plurality of search registers and zero or more search parameters'** (col. 19, line 18-col. 20 line 18)

With respect to claims 5, 24, 34, 38, 45, 49, 50, 51, 61, and 64-65, **Messenger** teaches **'the portion of the pattern to be masked is specified by a mask vector to mask off specific bytes in the pattern'** (col. 10 lines 10-40, and figures 3a-4).

With respect to claims 7 and 8, **Messenger** teaches **'at least one of the instructions specifies a windowed-find-first-forward search'** (col. 24 line 15-col. 25 line 62).

With respect to claims 9-11 and 25, **Messenger** teaches **'the search execution engine generates at least one result output indicative of success in searching the content in the search registers'** (col. 9 lines 1-30 and *result collection* starting on col. 27).

With respect to claims 12-14, 23, and 53, **Messenger** teaches **'at least one search instruction includes a field that specifies a parameter to use to control the search or a pointer into a memory that stores the parameter to control the search'** (col. 12 line 65-col. 13 line 35 and col. 10 starting at line 10).

With respect to claims 16-18 and 32, **Messenger** teaches **'a register file'** as a character register (abstract and figure 2.)

With respect to claims 19 and 66, **Messenger** teaches **'a memory to store one or more search instructions to be applied to data in the search registers'** as special-purpose processors store search conditions (col. 1 lines 61-67).

With respect to claim 20, **Messenger** teaches **‘to perform searches for arbitrarily long patterns in the content in the search registers’** (abstract and col. 5 lines 26-36).

With respect to claims 21 and 70, **Messenger** teaches **‘instruction sequencer for applying one or more search instructions to the search execution engine’** (col. 8 lines 64-67).

With respect to claims 27, 33, 36, 40, 41, 46,49, and 68, **Messenger** teaches **‘a search array coupled to the plurality of input payload search registers, wherein content in the plurality of search registers is replicated and stored in the search array’** (col. 27 lines 7-53 and figures 3a-f and 15)

**‘a sorter coupled to the search array to perform the one or more operations in response to information specified by one or more search instructions’** (col. 4 line 62-col. 5 line 4 and element 4 of figure 1).

With respect to claim 28, 29, 35, 39, 48, 54, and 62 **Messenger** teaches **‘the sorter is coupled to receive the M match lines to perform the one or more operations associated with matches indicated by the M match lines’** (col. 4 line 62-col. 5 line 4, col. 18 *general purpose lines* description and element 4 of figure 1).

With respect to claim 31, **Messenger** teaches **‘the information specifies a location in a memory at which the range is stored’** (col. 26, lines 67-64).

With respect to claims 37, and 44, **Messenger** **‘the second output is indicative of a number of matches in a range of the M match lines’** (col. 8 lines 28-39).

With respect to claims 42, 43, and 58, **Messenger** teaches **'a counter to determine a number of matches in the search array'** as *accumulator logic* (col. 16).

With respect to claims 47 and 48, **Messenger** teaches A rule engine content processor comprising:

**'a search array to perform pattern matching between data stored in the search array and an N byte pattern from the search instruction received on a first input, the search array having M match lines as outputs with each of the M match lines associated with a group of data stored in the array and being indicative of whether the N byte pattern matches data stored in its associated group of data stored in the search array'** (col. 27 lines 7-53 and figures 3a-f and 15)

**'a sorter coupled to receive the M match lines to perform one or more operations associated with matches indicated by the M match lines, the one or more operations being performed in response to information specified by the rule, and further wherein the sorter outputs data indicative of any match found'** (col. 4 line 62-col. 5 line 4, col. 18 *general purpose lines* description and element 4 of figure 1).

With respect to claims 52 and 53, **Messenger** teaches **the rule includes the pair of offsets'** (col. 28, lines 55-59).

With respect to claims 55-57 and 59, **Messenger** teaches **55. The rule engine content processor defined in claim 47 wherein the sorter further comprises: a priority encoder to identify a location in the search array corresponding to the M match lines corresponding to**

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a first occurrence of a match between the pattern and data stored in the search array in relation to one side of the search array' (col. 18 line 35-col. 19 line 16).

With respect to claim 60, **Messenger** teaches 'the selector has a second output indicating if a match occurred between the pattern and data in the search array' (col. 4 lines 62-67).

With respect to claim 69, **Messenger** teaches 'loading the search registers is performed to store, replicate, and interleave data such that data for one row is stored in an adjacent row in shifted form' col. 7 line 64-67 and figure 3a).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 71-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Messenger** as applied to claims 1-70 above and further in view of **Herman et al.** ('Herman' hereinafter) (US Patent 5,050,075).

With respect to claim 71, **Messenger** teaches A process for performing contextual searches in a pipelined fashion, the process comprising:

'fetching a rule from a rule memory' (col. 1 lines 62-67).



**‘executing one or more search operations on values in a plurality of input payload search registers storing content’** (abstract).

**‘performing sort operations on results of executing the one or more search operations’** as generating results in a nested arrangement (col. 4 lines 14-25).

Messenger fails to teach **‘decoding the rule and assembling indirect fields’**

**Herman**, however, teaches **decoding the rule and assembling indirect fields** as instruction decode stage (col. 10, lines 22-27) to decode instructions.

It would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because Herman’s teaching would have provided Messenger’s system with decoding instructions.

With respect to claim 72, **Messenger** teaches **‘four stage pipeline with a search array and a sorter’** (col. 5 lines 45-56).

### ***Response to Arguments***

Applicant's arguments filed 8/31/2006 have been fully considered but they are not persuasive.

On page 21 of the Applicant’s remarks, it is argued the Messenger reference does not teach or suggest a “search array coupled to the plurality of search registers,” and that “content in the plurality of search registers is replicated and stored in the search array.” The Examiner respectfully disagrees.

In at least figures 3a-3e Messenger teaches these limitations. A “search array coupled to the plurality of search registers,” can be seen in at least step (a) of figure 3a where the search registers (pattern registers) contain the letters C A T (col. 12, lines 19-30). The search array can then be seen in line (a), which contains CATX. It is suggested to the Examiner that the pattern registers in figure 3a have to be coupled to the search array (in line (a)) for the invention to work properly. Further, the Applicant submits on page 21 of the remarks that Messenger discloses an array that contains the registers. It is inherent that an array containing registers would be the same as being coupled.

The Applicant's also argue that Messenger fails to teach, “content in the plurality of search registers is replicated and stored in the search array.” The Examiner kindly submits that Messenger does teach this limitation because again, as seen in at least figure 3a, the letters CAT of the pattern registers are the same as those found in line (a). This leads the Examiner to interpret that the letters are replicated into the search array found in line (a).

Finally, Applicant's argue on page 22 that there is inadequate motivation to combine the references of Messenger and Herman. The Examiner submits that in the same field of endeavor (i.e. pattern matching), It would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the teachings would aid Messenger in the areas of speed and efficiency as disclosed by Herman (col. 1 lines 50-55 and col. 2 lines 43-46). Such a system would provide useful to Messenger as he is also interested in speed and performance of searching (col. 1 lines 28-35 of Messenger).

*Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

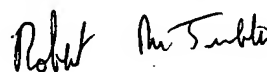
***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert M. Timblin whose telephone number is 571-272-5627. The examiner can normally be reached on M-F 8:00-4:30.

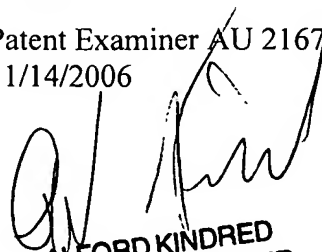
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Robert M. Timblin



Patent Examiner AU 2167  
11/14/2006



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